

SEQUENCE LISTING

<110> Merck Patent GmbH

<120> DNA SEQUENCE AND PREPARATION OF GRASS POLLEN ALLERGEN Phl p 4

<130> MERCK-2966

<140> US 10/518,927

<141> 2004-12-23

<150> PCT/EP2003/006092

<1511> 2003-06-11

<160> 52

<170> PatentIn version 3.1

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Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
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Asp Asn Val Lys Pro Ile Tyr Ile Val Thr Pro Thr Asn Ala Ser His
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Ile Gln Ser Ala Val Val Cys Gly Arg Arg His Gly Val Arg Ile Arg
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260 265 270

Phe Glu Ala Met Tyr Leu Gly Thr Cys Gln Thr Leu Thr Pro Met Met
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Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Ala Ser His Cys Asn Glu
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Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu	
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Gln Pro Glu Glu Phe Ala Val Val Asp Leu Ser Lys Met Arg Ala Val	
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Val Asn Tyr Trp Phe Ala Pro Gly Ala Gly Ala Ala Pro Leu Ser Trp
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Ser Lys Glu Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
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Val Pro Pro Thr Val Thr Ile Phe Lys Ile Ser Lys Thr Val Ser Glu			
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Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Val Val Ala Pro Gln Leu			
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ccc gcc gac ctc atg atc cgc atc gtc gcg cag ggg ccc aag gcc acg			816
Pro Ala Asp Leu Met Ile Arg Ile Ala Gln Gly Pro Lys Ala Thr			

260

265

270

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1503

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<211> 500
<212> PRT
<213> Phleum pratense

<400> 6

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Cys Leu Val
1 5 10 15

Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
20 25 30

Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
35 40 45

Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
50 55 60

Ile Gln Ser Ala Val Val Cys Gly Arg Arg His Ser Val Arg Ile Arg
65 70 75 80

Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
85 90 95

Gln Pro Glu Thr Phe Ala Val Val Asp Leu Asn Lys Met Arg Ala Val
100 105 110

Trp Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
115 120 125

Leu Gly Glu Leu Tyr Tyr Ala Ile Tyr Lys Ala Ser Pro Thr Leu Ala
130 135 140

Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Phe Ala
145 150 155 160

Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
165 170 175

Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
180 185 190

Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
195 200 205

Gly Glu Ser Phe Gly Ile Val Val Ala Trp Gln Val Lys Leu Leu Pro
210 215 220

Val Pro Pro Thr Val Thr Ile Phe Lys Ile Ser Lys Thr Val Ser Glu
225 230 235 240

Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Val Val Ala Pro Gln Leu
245 250 255

Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Gln Gly Pro Lys Ala Thr
260 265 270

Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Leu Met
275 280 285

Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro Ser His Cys Asn Glu
290 295 300

Met Ser Trp Ile Gln Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305 310 315 320

Ala Leu Glu Asp Asp Leu Leu Asn Arg Asn Asn Ser Phe Lys Pro Phe
325 330 335

Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro Lys Thr Val
340 345 350

Trp Glu Gln Ile Leu Asn Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
355 360 365

Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ser
370 375 380

Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385 390 395 400

Val Asn Tyr Trp Phe Ala Pro Gly Ala Ala Ala Pro Leu Ser Trp

405

410

415

Ser Lys Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
420 425 430

Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
435 440 445

Val Val Asn Asp Val Ser Thr Tyr Ala Ser Gly Lys Val Trp Gly Gln
450 455 460

Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465 470 475 480

Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
485 490 495

Ile Lys Lys Tyr
500

<210> 7
<211> 10
<212> PRT
<213> Phleum pratense

<220>
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<222> (6)..(6)
<223> undetermined amino acid

<400> 7

Ile Val Ala Leu Pro Xaa Gly Met Leu Lys
1 5 10

<210> 8
<211> 14
<212> PRT
<213> Lolium perenne

<400> 8

Phe Leu Glu Pro Val Leu Gly Leu Ile Phe Pro Ala Gly Val
1 5 10

<210> 9
<211> 9

<212> PRT
<213> *Lolium perenne*

<400> 9

Gly Leu Ile Glu Phe Pro Ala Gly Val
1 5

<210> 10
<211> 12
<212> PRT
<213> *Dactylus glomerata*

<400> 10

Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys
1 5 10

<210> 11
<211> 11
<212> PRT
<213> *Dactylus glomerata*

<400> 11

Val Asp Pro Thr Asp Tyr Phe Gly Asn Glu Gln
1 5 10

<210> 12
<211> 17
<212> PRT
<213> *Dactylus glomerata*

<400> 12

Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln Leu Gly Glu Leu Ser
1 5 10 15

Tyr

<210> 13
<211> 15
<212> PRT
<213> *Dactylus glomerata*

<400> 13

Gly Val Leu Phe Asn Ile Gln Tyr Val Asn Tyr Trp Phe Ala Pro
1 5 10 15

<210> 14
<211> 11
<212> PRT
<213> Cynodon dactylon

<400> 14

Lys Thr Val Lys Pro Leu Tyr Ile Ile Thr Pro
1 5 10

<210> 15
<211> 22
<212> PRT
<213> Cynodon dactylon

<400> 15

Lys Gln Val Glu Arg Asp Phe Leu Thr Ser Leu Thr Lys Asp Ile Pro
1 5 10 15

Gln Leu Tyr Leu Lys Ser
20

<210> 16
<211> 16
<212> PRT
<213> Cynodon dactylon

<400> 16

Thr Val Lys Pro Leu Tyr Ile Ile Thr Pro Ile Thr Ala Ala Met Ile
1 5 10 15

<210> 17
<211> 24
<212> PRT
<213> Cynodon dactylon

<400> 17

Leu Arg Lys Tyr Gly Thr Ala Ala Asp Asn Val Ile Asp Ala Lys Val
1 5 10 15

Val Asp Ala Gln Gly Arg Leu Leu
20

<210> 18
<211> 14
<212> PRT
<213> Cynodon dactylon

<400> 18

Lys Trp Gln Thr Val Ala Pro Ala Leu Pro Asp Pro Asn Met
1 5 10

<210> 19

<211> 15

<212> PRT

<213> Cynodon dactylon

<400> 19

Val Thr Trp Ile Glu Ser Val Pro Tyr Ile Pro Met Gly Asp Lys
1 5 10 15

<210> 20

<211> 19

<212> PRT

<213> Cynodon dactylon

<220>

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<222> (8)..(8)

<223> undetermined amino acid

<400> 20

Gly Thr Val Arg Gln Leu Leu Xaa Arg Thr Ser Asn Ile Lys Ala Phe
1 5 10 15

Gly Lys Tyr

<210> 21

<211> 23

<212> PRT

<213> Cynodon dactylon

<400> 21

Thr Ser Asn Ile Lys Ala Phe Gly Lys Tyr Lys Ser Asp Tyr Val Leu
1 5 10 15

Glu Pro Ile Pro Lys Lys Ser
20

<210> 22

<211> 13

<212> PRT

<213> Cynodon dactylon

<400> 22

Tyr Arg Asp Leu Asp Leu Gly Val Asn Gln Val Val Gly
1 5 10

<210> 23

<211> 15

<212> PRT

<213> Cynodon dactylon

<400> 23

Ser Ala Thr Pro Pro Thr His Arg Ser Gly Val Leu Phe Asn Ile
1 5 10 15

<210> 24

<211> 36

<212> PRT

<213> Cynodon dactylon

<400> 24

Ala Ala Ala Ala Leu Pro Thr Gln Val Thr Arg Asp Ile Tyr Ala Phe
1 5 10 15

Met Thr Pro Tyr Val Ser Lys Asn Pro Arg Gln Ala Tyr Val Asn Tyr
20 25 30

Arg Asp Leu Asp
35

<210> 25

<211> 149

<212> DNA

<213> Phleum pratense

<400> 25

caccggaagg gggtgctgtt caacatccag tacgtcaact actggttcgc cccgggagcc 60

ggcgcggcgc cattgtcgtg gagcaaggag atctacaact acatggagcc gtacgtgagc 120

aaggaccccg tccaggccta cgccaaacta 149

<210> 26

<211> 299

<212> DNA

<213> Phleum pratense

<400> 26

actactggtt cgccccggga gccggcgccg cgcattgtc gtggagcaag gagatctaca 60

actacatgga gccatacgtg agcaagaacc ccaggcaggc ctacgccaac tacagggaca 120
tcgacctcgg gaggaacgag gtggtaacg acgtctccac cttcagcagc ggtttggtgt 180
ggggccagaa atacttcaag ggcaacttcc agaggctcgc catcaccaag ggcaagggtgg 240
atcccaccga ctacttcagg aacgagcaga gcatcccgcc gctcatcaaa aagtactga 299

<210> 27
<211> 33
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> undetermined amino acid

<400> 27

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
1 5 10 15

Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
20 25 30

Pro

<210> 28
<211> 18
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> undetermined amino acid

<400> 28

Ser Ala Thr Pro Phe Xaa His Arg Lys Gly Val Leu Phe Asn Ile Gln
1 5 10 15

Tyr Val

<210> 29

<211> 10
<212> PRT
<213> Phleum pratense

<220>
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<222> (3)..(8)
<223> undetermined amino acid

<400> 29

Gly Leu Xaa Tyr Arg Xaa Leu Xaa Pro Glu
1 5 10

<210> 30
<211> 12
<212> PRT
<213> Phleum pratense

<220>
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<222> (2)..(9)
<223> undetermined amino acid

<400> 30

Lys Xaa Met Gly Asp Asp His Phe Xaa Ala Val Arg
1 5 10

<210> 31
<211> 9
<212> PRT
<213> Phleum pratense

<400> 31

Ala Pro Glu Gly Ala Val Asp Ile Ile
1 5

<210> 32
<211> 16
<212> PRT
<213> Phleum pratense

<400> 32

Met Glu Pro Tyr Val Ser Ile Asn Pro Val Gln Ala Tyr Ala Asn Tyr
1 5 10 15

<210> 33
<211> 15

<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> undetermined amino acid

<400> 33

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 34
<211> 10
<212> PRT
<213> Phleum pratense

<400> 34

Leu Tyr Ala Lys Ser Ser Pro Ala Tyr Pro
1 5 10

<210> 35
<211> 33
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> undetermined amino acid

<400> 35

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
1 5 10 15

Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
20 25 30

Pro

<210> 36
<211> 29
<212> PRT
<213> Phleum pratense

<220>

<221> MISC_FEATURE
<222> (14)..(14)
<223> undetermined amino acid

<400> 36

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
1 5 10 15

Lys Glu Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro
20 25

<210> 37
<211> 15
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (4)..(14)
<223> undetermined amino acid

<400> 37

Tyr Phe Pro Xaa Xaa Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 38
<211> 15
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (4)..(14)
<223> undetermined amino acid

<400> 38

Tyr Phe Pro Xaa Xaa Ala Lys Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 39
<211> 15
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (4)..(14)

<223> undetermined amino acid

<400> 39

Tyr Phe Pro Xaa Xaa Ala Ala Lys Asp Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 40

<211> 11

<212> PRT

<213> Phleum pratense

<220>

<221> MISC_FEATURE

<222> (4)..(5)

<223> undetermined amino acid

<400> 40

Tyr Phe Pro Xaa Xaa Leu Ala Asn Glu Asp Phe
1 5 10

<210> 41

<211> 18

<212> PRT

<213> Phleum pratense

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> undetermined amino acid

<400> 41

Ser Ala Thr Pro Phe Xaa His Arg Lys Gly Val Leu Phe Asn Ile Gln
1 5 10 15

Tyr Val

<210> 42

<211> 10

<212> PRT

<213> Phleum pratense

<220>

<221> MISC_FEATURE

<222> (3)..(8)

<223> undetermined amino acid

<400> 42

Gly Leu Xaa Tyr Arg Xaa Leu Xaa Pro Glu
1 5 10

<210> 43
<211> 12
<212> PRT
<213> Phleum pratense

<220>
<221> MISC_FEATURE
<222> (2)..(9)
<223> undetermined amino acid

<400> 43

Lys Xaa Met Gly Asp Asp His Phe Xaa Ala Val Arg
1 5 10

<210> 44
<211> 9
<212> PRT
<213> Phleum pratense

<400> 44

Ala Pro Glu Gly Ala Val Asp Ile Ile
1 5

<210> 45
<211> 16
<212> PRT
<213> Phleum pratense

<400> 45

Met Glu Pro Tyr Val Ser Ile Asn Pro Val Gln Ala Tyr Ala Asn Tyr
1 5 10 15

<210> 46
<211> 29
<212> DNA
<213> Phleum pratense

<220>
<221> misc_feature
<222> (1)..(29)
<223> 'n' means inosin

<400> 46
ytntaygcna arwsnwsncc ngcntaycc

29

<210> 47
<211> 28
<212> DNA
<213> *Phleum pratense*

<220>
<221> misc_feature
<222> (1)..(28)
<223> 'n' means inosin

<400> 47
caymgnaarg gngtnytntt yaayatmc

28

<210> 48
<211> 26
<212> DNA
<213> *Phleum pratense*

<220>
<221> misc_feature
<222> (1)..(26)
<223> 'n' means inosin

<400> 48
tarttngcrt angcytgnac nggrtt

26

<210> 49
<211> 23
<212> DNA
<213> *Phleum pratense*

<400> 49
actactgggtt cgccccggga gcc

23

<210> 50
<211> 28
<212> DNA
<213> *Phleum pratense*

<400> 50
tgaagtattt ctggcccccac accaaacc

28

<210> 51
<211> 24
<212> DNA
<213> *Phleum pratense*

<400> 51
cccttggtga tggcgagcct ctgg

24

<210> 52
<211> 23
<212> DNA
<213> *Phleum pratense*

<400> 52
ctcagtccctg gggcagacca tcc

23